

NON-ORTHOGONAL WRITE LINE STRUCTURE IN MRAM

ABSTRACT

[0037] An MRAM cell including an MRAM cell stack located over a substrate and first and second write lines spanning at least one side of the MRAM cell stack and defining a projected region of intersection of the MRAM cell stack and the first and second write lines. The MRAM cell stack includes a pinned layer, a tunneling barrier layer, and a free layer, the tunneling barrier layer interposing the pinned layer and the free layer. The first write line extends in a first direction within the projected region of intersection. The second write line extends in a second direction within the projected region of intersection. The first and second directions are angularly offset by an angle ranging between 45 and 90 degrees, exclusively. At least one write line may be perpendicular to the easy axis of free layer, while the other line may be rotated off the easy axis of the free layer by an angle which is larger than zero, such as to compensate for a shifting astroid curve.